

What is claimed is:

1. A chemical treatment system comprising:

a closed processing cup which subjects a member to be treated
5 to chemical treatment while circulating therein a treatment fluid at
a certain pressure and a certain flow rate;
a fluid reservoir tank for storing the treatment fluid; and
a pump for supplying the treatment fluid from the fluid reservoir
tank to the closed processing cup, wherein
10 the pump periodically changes at least either the pressure or
flow rate of the treatment fluid in the closed processing cup.

2. The chemical treatment system according to claim 1, wherein
the pump is constituted of a pulsating pump, and the pulsating pump
15 periodically changes at least either the pressure or flow rate of the
treatment fluid in the closed processing cup.

3. The chemical treatment system according to claim 2, wherein
the pulsating pump is constructed of a bellows pump and the bellows
20 pump periodically pulsates a bellows, to thereby supply the treatment
fluid to the closed processing cup, thus periodically changing at least
either the pressure or flow rate of the treatment fluid circulating
through the closed processing cup.

25 4. The chemical treatment system according to claim 2, wherein
the pulsating pump is constructed of a diaphragm pump, and the diaphragm
pump periodically pulsates a diaphragm, to thereby supply the treatment
fluid to the closed processing cup, thus periodically changing at least
either the pressure or flow rate of the treatment fluid circulating
30 through the closed processing cup.

5. The chemical treatment system according to claim 1, further
comprising: a supply channel for supplying the treatment fluid to the
closed processing cup, a discharge channel for discharging the treatment
35 fluid from the closed processing cup, and a flow throttle valve provided
in the discharge channel.

6. A chemical treatment system comprising:

a closed processing cup which subjects a member to be treated
40 to chemical treatment while circulating therein a treatment fluid at

a certain pressure and a certain flow rate;
a fluid reservoir tank for storing the treatment fluid; and
a pumping apparatus for supplying the treatment fluid from the
fluid reservoir tank to the closed processing cup, wherein

5 the flowing direction of the treatment fluid within the closed
processing cup is periodically changed.

10 7. The chemical treatment system according to claim 6, wherein
the closed processing cup has first and second treatment fluid flow
ports, and the pumping apparatus has first and second pumps; and wherein
the first pump circulates the treatment fluid in the closed processing
cup from the first treatment fluid flow port to the second treatment
fluid flow port, and the second pump circulates the treatment fluid
in the closed processing cup from the second treatment fluid flow port
15 to the first treatment fluid flow port.

8. The chemical treatment system according to claim 7, further
comprising:

20 a first treatment fluid channel to be connected to the first
treatment fluid flow port of the closed processing cup;

 a second treatment fluid channel to be connected to the second
treatment fluid flow port of the closed processing cup;

25 a first flow regulation valve provided in the first treatment
fluid flow channel; and

 a second flow regulation valve provided in the second treatment
fluid flow channel,

30 wherein, when the treatment fluid flows from the first treatment
fluid flow port to the second treatment fluid flow port in the closed
processing cup, the second flow regulation valve provided in the second
treatment fluid flow channel connected to the second treatment fluid
flowport is taken as a flow throttle valve; and wherein, when the treatment
fluid flows from the second treatment fluid flow port to the first
treatment fluid flow port, the first flow regulation valve provided
in the first treatment fluid flow channel connected to the first treatment
35 fluid flow port is taken as a flow throttle valve.

40 9. The chemical treatment system according to claim 1, wherein
the member to be treated has a plurality of blind holes which are closed
at one end and open at the other end, and a surface of the member, including
interior surfaces of the blind holes, is subjected to chemical treatment

while the member is placed in the closed processing cup such that openings of the blind holes remain in contact with the circulating treatment fluid.

5 10. The chemical treatment system according to claim 1, wherein the member to be subjected to treatment is a semiconductor wafer; the semiconductor wafer has a plurality of via holes which are closed at one end and open at the other end; and a surface of the semiconductor wafer, including interior surfaces of the via holes, is subjected to chemical treatment while the semiconductor wafer is placed in the closed processing cup such that openings of the via holes remain in contact with the circulating treatment fluid.

10 11. The chemical treatment system according to claim 1, wherein the member to be subjected to treatment is a printed board; the printed board has a plurality of through holes which are closed at one end and open at the other end; and a surface of the semiconductor wafer, including interior surfaces of the through holes, is subjected to chemical treatment while the semiconductor wafer is placed in the closed processing cup such that openings of the through holes remain in contact with the circulating treatment fluid.

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